

## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

ALLARD, Susan, Joyce  
Boulton Tennant  
Verulam Gardens  
70 Gray's Inn Road  
London WC1X 8BT  
ROYAUME-UNI

Date of mailing (day/month/year) 25 April 2000 (25.04.00)	<b>IMPORTANT NOTIFICATION</b>
Applicant's or agent's file reference SJA50484/005	
International application No. PCT/GB99/01979	International filing date (day/month/year) 23 June 1999 (23.06.99)

## 1. The following indications appeared on record concerning:

☐ the applicant    ☐ the inventor    ☒ the agent    ☐ the common representative

## Name and Address

ALLARD, Susan, Joyce  
Boulton Tennant  
27 Furnival Street  
London EC4A 1PQ  
United Kingdom

State of Nationality

State of Residence

Telephone No.

0171-430-7500

Facsimile No.

0171-831-1718

Teleprinter No.

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person    ☐ the name    ☒ the address    ☐ the nationality    ☐ the residence

## Name and Address

ALLARD, Susan, Joyce  
Boulton Tennant  
Verulam Gardens  
70 Gray's Inn Road  
London WC1X 8BT  
United Kingdom

State of Nationality

State of Residence

Telephone No.

+44 20 7430 7500

Facsimile No.

+44 20 7831 1768

Teleprinter No.

## 3. Further observations, if necessary:

## 4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Anman QIU

Telephone No.: (41-22) 338.83.38

# PATENT COOPERATION TREATY

**PCT**

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
United States Patent and Trademark  
Office  
Box PCT  
Washington, D.C.20231  
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 28 February 2000 (28.02.00)	
<b>International application No.</b> PCT/GB99/01979	<b>Applicant's or agent's file reference</b> SJA50484/005
<b>International filing date (day/month/year)</b> 23 June 1999 (23.06.99)	<b>Priority date (day/month/year)</b> 02 July 1998 (02.07.98)
<b>Applicant</b> HUGHES, John, Farrell et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

27 January 2000 (27.01.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<p>The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No.: (41-22) 740.14.35</p>	<p>Authorized officer</p> <p>Juan Cruz</p> <p>Telephone No.: (41-22) 338.83.38</p>
--	--



Application No: GB 9814377.9  
Claims searched: 1-15

Examiner: J.H. Warren  
Date of search: 28 October 1998

Patents Act 1977  
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.P): B2F; A5G

Int CI (Ed.6): A01N 25/04, 25/06; A61L 9/14; B05B 5/047

Other: ONLINE Databases: WPI, CLAIMS and JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
Y	GB 2 222 966 A NRDC - see page 1 lines 1-29 and page 5 lines 11-20	1
Y	GB 2 128 900 A CHRISTOFIDIS - whole document, especially page 2 lines 41-43	1
Y	WO 97/33527 A1 PROCTER & GAMBLE - see Claim 1	1
Y	WO 97/28883 A1 RECKITT & COLMAN - whole document, in particular Claim 7	1-5
Y	US 4 776 515 MICHALCHIK - see especially Column 6 lines 43-47	1

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>SJA50484/005</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/GB 99/ 01979</b>	International filing date (day/month/year) <b>23/06/1999</b>	(Earliest) Priority Date (day/month/year) <b>02/07/1998</b>
Applicant <b>UNIVERSITY OF SOUTHAMPTON et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

### 1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

### 4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

### 5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

### 6. The figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☒ None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No.  
PCT/GB 99/01979

## A. CLASSIFICATION OF SUBJECT MATTER

A61L9/14, A61L9/22

According to International Patent Classification (IPC) or to both national classification and IPC 7

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0673656 A (PERENTRON ENGINEERING LIMITED) 27 September 1995, claim 4. --	1, 7, 9
A	DATABASE WPI ON EPOQUE, week 9726, London: Derwent Publications Ltd., AN 97-287744, Class D22; & RU 2068706 A (UNIV TARTUS), abstract. --	1, 7, 8
A	US 5403587 A (MCCUE et al.) 04 April 1995, the whole document. ----	1, 7-13

☐ Further documents are listed in the continuation of box C.☐ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- \*&\* document member of the same patent family

Date of the actual completion of the international search  
24 September 1999Date of mailing of the international search report  
29. 10. 1999

## Name and mailing address of the ISA

European Patent Office, P.O. 5818 Patentaan 2  
NL - 2280 HV Rijswijk  
Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl,  
Fax (+ 31-70) 340-3016

## Authorized officer

SCHNASS e.h.

# ANHANG

zum Internationalen Recherchen-  
bericht über die internationale  
Patentanmeldung Nr.

# ANNEX

to the International Search  
Report to the International Patent  
Application No.

# ANNEXE

au rapport de recherche inter-  
national relatif à la demande de brevet  
international n°

PCT/GB 97/01979 SAE 238985

In diesem Anhang sind die Mitglieder  
der Patentfamilien der im obenge-  
nannten internationalen Recherchenbericht  
angeführten Patentedokumente angegeben.  
Diese Angaben dienen nur zur Unter-  
richtung und erfolgen ohne Gewähr.

This Annex lists the patent family  
members relating to the patent documents  
cited in the above-mentioned inter-  
national search report. The Office is  
in no way liable for these particulars  
which are given merely for the purpose  
of information.

La présente annexe indique les  
membres de la famille de brevets  
relatifs aux documents de brevets cités  
dans le rapport de recherche inter-  
national visée ci-dessus. Les renseigne-  
ments fournis sont donnés à titre indica-  
tif et n'engagent pas la responsabilité  
de l'Office.

In Recherchenbericht angeführtes Patentedokument Patent document cited in search report Document de brevet cité dans le rapport de recherche	Datum der Veröffentlichung Publication date Date de publication	Mitglied(er) der Patentfamilie Patent family member(s) Membre(s) de la famille de brevets	Datum der Veröffentlichung Publication date Date de publication
EP A1 673656	27-09-1995	AT E 157013 DE C0 59500520 EP B1 673656	15-09-1997 25-09-1997 20-08-1997
RU C1 2068706	10-11-1996	keine - none - rien	
US A 5403587	04-04-1995	keine - none - rien	

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

ALLARD, Susan J.  
BOULT WADE TENNANT  
27 Furnival Street  
London EC4A 1PQ  
GRANDE BRETAGNE

*Miss. Allard*

Records	HCC - 13/04
Nat. Phase	02/01/2001
L.D. on Comp	
In Diary	

PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT  
(PCT Rule 71.1)

Date of mailing  
(day/month/year) 10.04.2000

Applicant's or agent's file reference  
SJA50484/005

**IMPORTANT NOTIFICATION**

International application No.  
PCT/GB99/01979

International filing date (day/month/year)  
23/06/1999

Priority date (day/month/year)  
02/07/1998

Applicant  
UNIVERSITY OF SOUTHAMPTON et al.

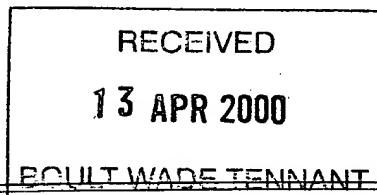
1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

#### 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.



Name and mailing address of the IPEA/



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Authorized officer

Fuerbass, C

Tel. +49 89 2399-8132



PCT

REC'D 13 APR 2000

WIPO PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference SJA50484/005		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB99/01979	International filing date (day/month/year) 23/06/1999	Priority date (day/month/year) 02/07/1998
International Patent Classification (IPC) or national classification and IPC A61L9/14		
Applicant UNIVERSITY OF SOUTHAMPTON et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  27/01/2000	Date of completion of this report  10.04.2000
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Katsoulas, K  Telephone No. +49 89 2399 8613  



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/01979

## I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

### Description, pages:

1-19 as originally filed

### Claims, No.:

1-15 as originally filed

### Drawings, sheets:

1/3-3/3 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/01979

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Yes:	Claims	1-15
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-15
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-15
	No:	Claims	

### 2. Citations and explanations

**see separate sheet**

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

**see separate sheet**

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

D1: WPI/Derwent Abstract, week 9726, AN 97-287744 & RU-A-2068706

**Ad Section V:**

1. D1 is considered as the closest available art. It discloses a method of disinfecting a space occupied by airborne microorganisms, which method comprises directing into the space liquid droplets from a spray device containing a disinfecting composition, electrically charging the composition and the air and electrostatically removing the microorganisms. It follows that claim 1 differs from D1 in that a unipolar charge is imparted to the liquid droplets by double layer charging during the spraying of the liquid droplets from the aerosol spray device, the unipolar charge being at a level such that the said droplets have a charge to mass ratio of at least  $\pm 1 \times 10^{-4}$  C/Kg.

The problem solved concerns the removal efficiency of airborne microorganisms. By the solution offered, charged droplets disperse to a greater extent and are attracted to the airborne microorganisms in a greater number.

From the remaining art, (EP-A-0673656, fig. 1) it is known to ionise (11) and spray (12) an air stream to remove airborne microorganisms. However, the two actions are independent and ionisation level is regulated to kill the microorganisms.

It follows that the claimed droplet dispersion effect at the required charge to mass ratio cannot be derived from the available art. Thus, claim 1 meets the requirements of Art. 33(3) PCT.

**Ad Section VII:**

1. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.

**Ad Section VIII:**

1. According to claim 1, the unipolar charge is imparted to the droplets by double layer charging during spraying i.e. interaction of the liquid and surfaces of the spray device. This excludes the application of external and internal electrical fields to achieve said charging. It follows that examples 1 (cf. page 16, lines 9-13) and 2

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

---

International application No. PCT/GB99/01979

(cf. page 18, line 19,20), as well as various parts of the description, make the scope of claim 1 ambiguous (Art. 6 PCT).

2. Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
3. The unit cfu/ml employed on pages 16 and 17 should be replaced by an appropriate SI unit.